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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,542	01/18/2002	Christoph Gebhardt	113737.7	6594

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BUCHANAN INGERSOLL PC  
1835 MARKET STREET, 14TH FLOOR  
PHILADELPHIA, PA 19103-2985

EXAMINER

JOHNSTON, PHILLIP A

ART UNIT PAPER NUMBER

2881

DATE MAILED: 06/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/031,542

Applicant(s)

GEBHARDT ET AL

Examiner

Phillip A. Johnston

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 22-52 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22-52 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. <u>5-24-2005</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                                     |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____.   |

***Detailed Action***

1. This Office Action is submitted in response to RCE / Amendment filed 3-30-2005, wherein claims 1-21 were previously canceled, and claim 22 has been amended. Claims 22-52 are pending.

***Claims Rejection – 35 U.S.C. 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

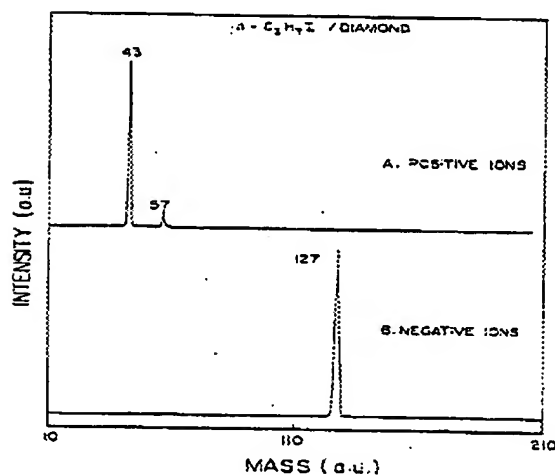
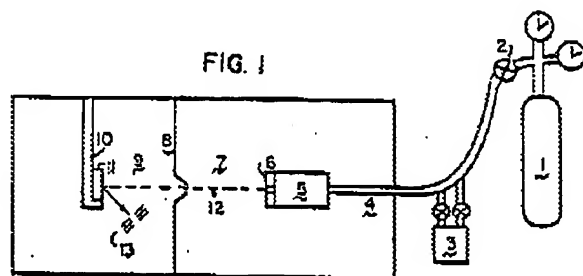
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 22-29,31,34-40,42,43,45,46,48,49,51, and 52 are rejected as being unpatentable over U.S. Patent No. 4,845,367 to Amirav, in view of Friedman, U.S. Patent No. 4,755,344.

Amirav (367) discloses the following;

(a) In Figure 1, an apparatus and method for producing ions by impinging a molecular beam 12 onto a solid surface 11, wherein a light gas (hydrogen or helium), or gas mixture, is supplied from a container 1 via a gas valve 2, which may be manually or remotely controlled to initiate the ion source. The substance to be ionized is supplied from a container 3. The gas from container 1, is first seeded (gas phase loading) with the substance to be ionized through 4 to a heating element 5 and then through a supersonic nozzle 6 disposed within a vacuum chamber 7.

Supersonic nozzle 6, which may have continuous or pulsed operation (as recited in claim 34), produces a hyperthermal beam of the gas of container 1 seeded with the substance of container 3 to be ionized. The supersonic beam 12, is directed through a skimmer and skimmer holder 8 into a high or ultra-high vacuum chamber and impinged on a solid surface 11 to induce molecular ionization or dissociative ionization. The ions so produced are extracted by an ion extractor 13, into a quadrupole mass analyzer where fragmentation spectra are obtained, as recited in claims 22-26,28,29,34,36,37 40,43, 46,49 and 52. See Column 3, line 30-42; and Figures 1 and 2 below;



(b) Impinging clusters on solid surfaces to initiate reactions, as recited in claims 24-26, 28, 31, 39, 45, and 48. See Column 1, line 48-58; and Column 2, line 43-65;

(c) Fragmenting chemically converted samples through excitation and forming both positive and negatively charged fragments, as recited in claims 22, 26, and 36.

See Column 2, line 55-68; and Figure 3 below;

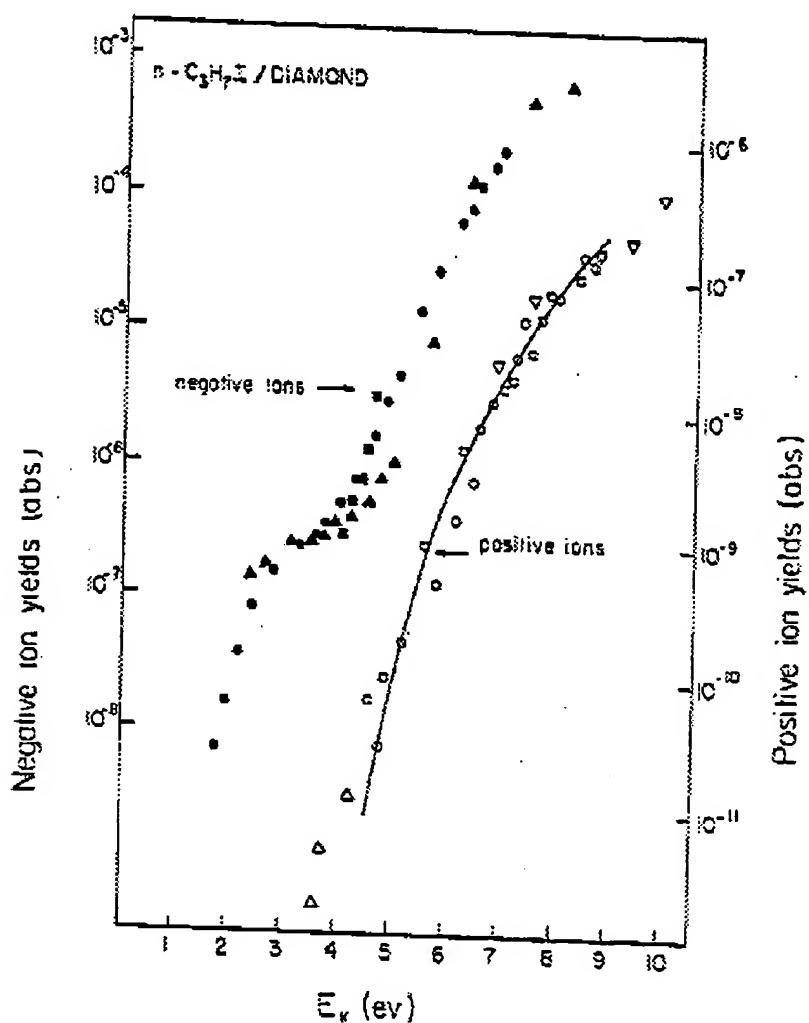


FIG 3

(d) Utilizing an angle of impingement of 22.5 degrees, as recited in claim 38. See Column 4, line 21-45.

(e) The use of single crystal diamond or molybdenum for the solid surface 11, as recited in claims 40, 43, and 49.

Amirav (367) as applied above fails to teach producing neutral clusters composed of polar molecules, as recited in claims 22 and 27. However, Friedman (344) discloses that it is known in the art to form neutral clusters of water containing up to 28 water molecules by the supersonic expansion of a gas through a nozzle, as recited in claims 22 and 27. See Column 1, line 48-63; and Column 2, line 27-41.

Therefore it would have been obvious to one of ordinary skill in the art that the cluster fragmentation method of Amirav (367) can be modified to use the carrier gas containing water molecules in accordance with Friedman (344), to provide a method for the generation of large cluster ions formed by expansion of gases through a supersonic nozzle.

4. Claims 30, 32, 33, 41, 44, 47, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amirav (367) and Friedman (344) in view of Aberth (669), U.S. Patent No. 4,851,669.

The combination of Amirav (367) and Friedman (344) discloses nearly all the limitations of claims 30, 32, 33, 41, 44, 47, and 50, but fail to teach the use of (a) an alkali reaction partner, as recited in claim 30; (b) reactive surfaces coated with an acid or base material, as recited in claims 32, and 33; and (c) reaction partner coatings with a surface density whose temporal average has a predetermined value, as recited in

claims 41,44,47, and 50. However, Aberth (669) discloses that it is known to direct neutral clusters at a target, where the resultant ions are mass analyzed, and further discloses the use of ion source 12 to impinge Cesium cluster ions upon a sample coated collision target plate 16, and producing fragmentation shown in Figure 10 below, as recited in claims 30,32, and 33. See Column 4, line 20-60; Column 8, line 45-65; and Figure 10 below.

It is implied herein that the coating surface density of Aberth (669) has a predetermined temporal average, as recited in claims 41,44,47, and 50.

Therefore it would have been obvious to one of ordinary skill in the art that the cluster fragmentation apparatus and method of Amirav (367) and Friedman (344) can be modified to use the resistive element forming method of Aberth (669), to provide collisional dissociation of parent ions in tandem mass spectrometric analysis of a material sample, thereby allowing application to a broad range of compounds, including relatively high molecular weight biological compounds.

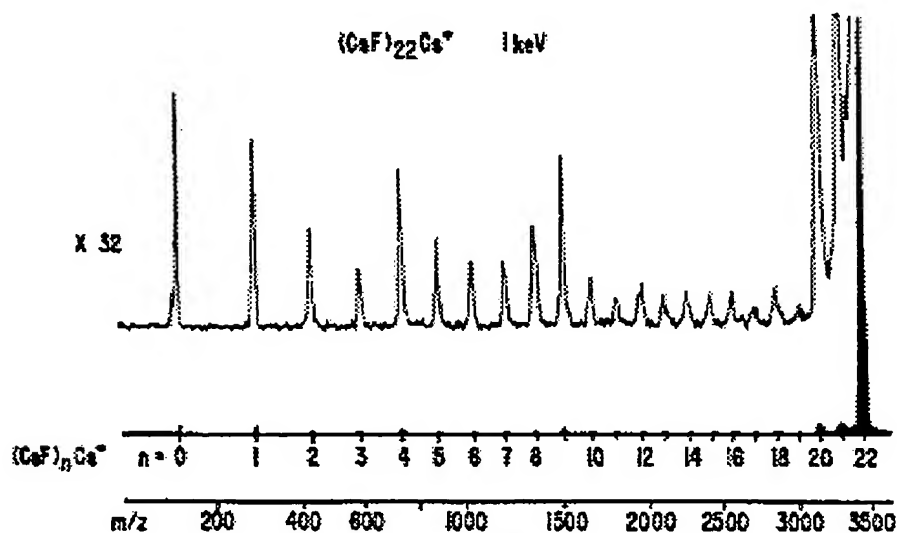


FIG. 10.

**Conclusion**

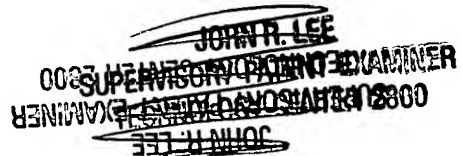
5. Any inquiry concerning this communication or earlier communications should be directed to Phillip Johnston whose telephone number is (571) 272-2475. The examiner can normally be reached on Monday-Friday from 6:30 am to 3:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiners supervisor John Lee can be reached at (571) 272-2477. The fax phone number for the organization where the application or proceeding is assigned is 703 872 9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PJ

May 24, 2005

  
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